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FERTILIZER RECOMMENDATIONS *for* ALBERTA

PREPARED BY
ALBERTA ADVISORY
FERTILIZER COMMITTEE

DISTRIBUTED BY
EXTENSION SERVICE
DEPT. OF AGRICULTURE

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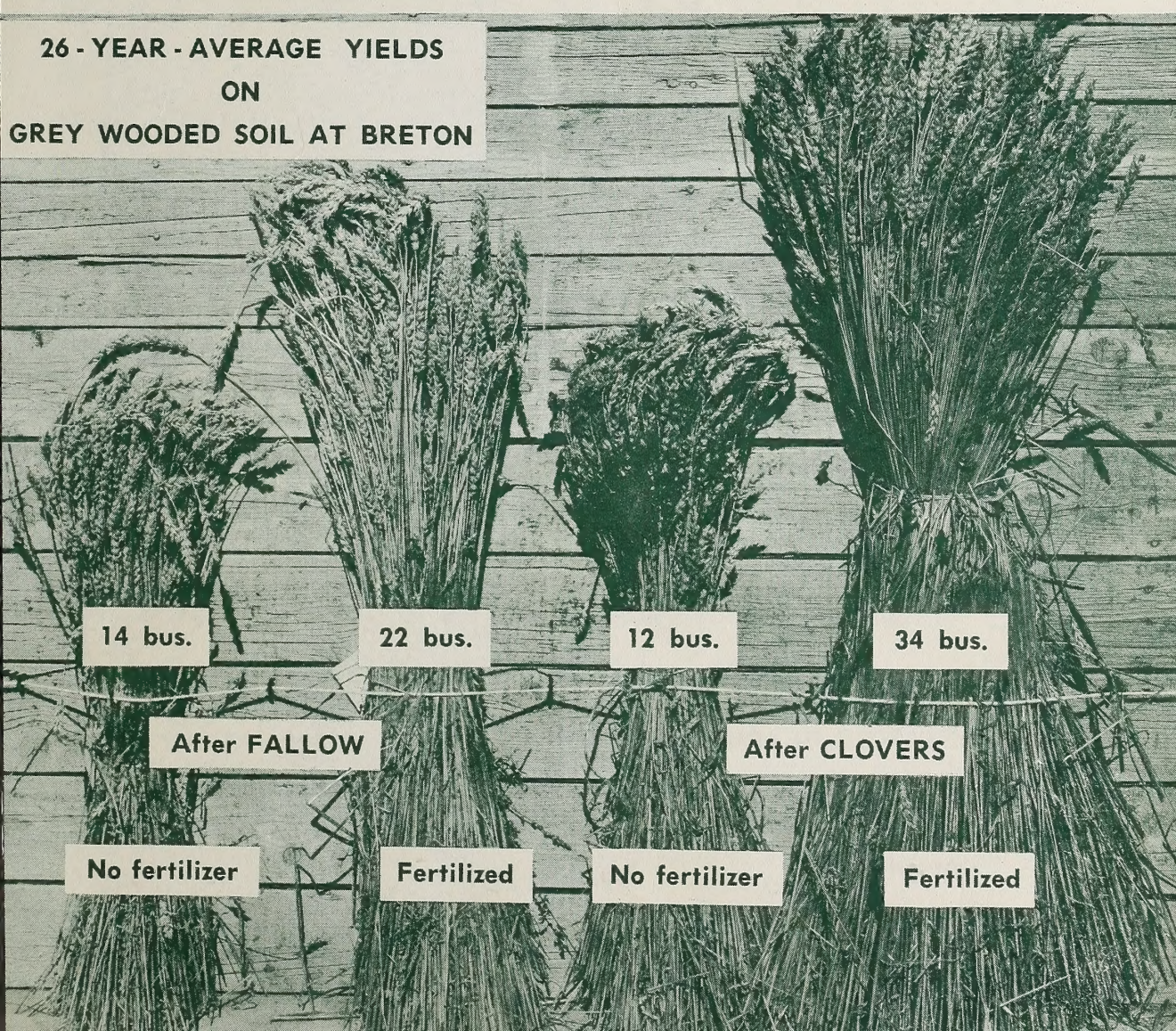
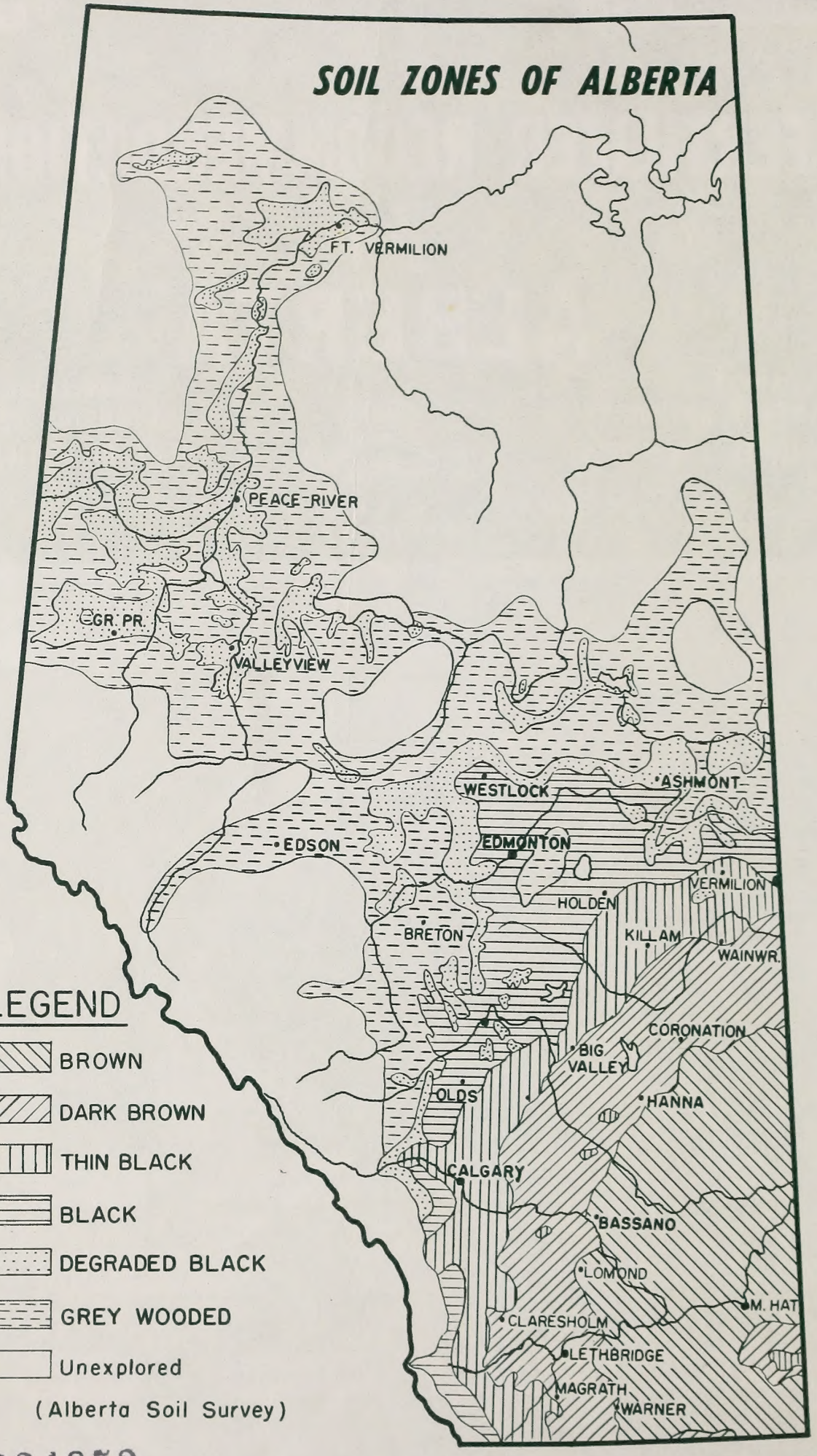


SOIL ZONES OF ALBERTA



DEGRADED BLACK SOILS OF FORT VERMILION AREA

Tests conducted to date, although limited in number suggest the following:

WHEAT, OATS, BARLEY, AND FLAX

On fallow—11-48-0 at 40 lb./Ac., drilled in.
On light to medium stubble or trash—try 16-20-0 at 80 lb./Ac.
On heavy stubble or trash and following grass breaking—try 27-14-0 at 100 lb./Ac. drilled in or 33.5-0-0 at 100 lb./Ac. broadcast plus 11-48-0 at 40 lb./Ac. at time of seeding.

GRASSES FOR SEED OR FORAGE

Use a high nitrogen fertilizer. See under Dark Brown and Thin Black Zones for recommended rates.

FERTILIZERS ON IRRIGATED SOILS

All irrigated soils will respond to barnyard manure and commercial fertilizers. These soils should be farmed intensively and a program of improving and maintaining fertility pays off in higher crop returns.

GRAINS

16-20-0 at 100 to 150 lb./Ac. drilled in with seed. If there is a heavy trash or stubble additional nitrogen may be needed and 27-14-0 at 125 to 175 lb./Ac. would be better. Alternatively broadcast 33.5-0-0 at 100 lb./Ac. and drill in 11-48-0 at 50 lb./Ac.

ALFALFA HAY

11-48-0 at 100 lb./Ac. top-dressed in early spring.

GRASS-LEGUME MIXTURES

Same as for alfalfa, followed by a top-dressing in June of 33.5-0-0 or 21-0-0 at 100 lb./Ac.

SUGAR BEETS

11-48-0 at 100 lb./Ac. planted with seed plus a pre-seeding treatment or side-dressing of 33.5-0-0 at 200 lb./Ac., 21-0-0 at 300 lb./Ac., or 82-0-0 at 80 lb./Ac.

CANNING CORN

11-48-0 at 80 lb./Ac. planted with seed or side-dressings of 16-20-0 at 100 to 150 lb./Ac., or 27-14-0 at 100 to 150 lb./Ac.

PEAS AND BEANS

11-48-0 at 50 lb./Ac. at seeding time in separate bands or broadcast prior to planting.

POTATOES

11-48-0 at 150 lb./Ac. in bands slightly below and to the side of the seed pieces.

FERTILIZING SPECIAL CROPS

POTATOES

Tests so far suggest the use of 11-48-0 at 100 to 200 lb./Ac. The fertilizer should be placed in bands an inch or two below and to the side of the seed pieces.

GARDENS AND LAWNS

Any of the fertilizers containing nitrogen and phosphorus can and should be used on gardens and lawns. For complete information write to Department of Extension, University of Alberta, Edmonton. Ask for Circular No. 30, "Soils and Fertilizers for Alberta Gardens and Lawns".

FERTILIZING STUBBLE CROPS

Nitrogen is likely to be an important limiting factor in crops grown on stubble, particularly where there is a large amount of trash; phosphorus is almost certain to be in short supply. A shortage of nitrogen results in a pale green or yellowish green color and a thin stand of crop. The appearance of previous stubble crops therefore should be used as a guide as to whether or not to use high nitrogen fertilizers. In the drier parts of the province where fallowing is practised to conserve moisture it must be kept in mind that stubbled-in crops are more likely to suffer from drought. This, coupled with the fact that the response of a stubble crop to nitrogen depends to a large degree on the growing conditions, means that the increases in yields resulting from fertilization will vary over a wide range.

Farmers must realize that while an investment in fertilizers for stubble crops may pay off well in some years there is more risk involved than in fertilization of crops grown on fallow because the cost is higher and the response more erratic.

RECOMMENDED RATES OF FERTILIZATION

Brown Zone

Moisture is the greatest limiting factor in crop production in this zone and fertilizers are not generally recommended. In heavy textured soils, however, especially when moisture reserves are good, the use of 11-48-0 at 30 to 40 lb./Ac. drilled in with the seed is likely to prove profitable on grains grown on fallow. This would probably also apply to flax, rape, and mustard. Tame grasses for hay or seed production will also respond well to an application of nitrogen when moisture conditions are good. For seed production broadcast in early September, 33.5-0-0 at 75 to 150 lb./Ac. or 21-0-0 at 120 to 240 lb./Ac.; for hay broadcast in fall or spring.

CROP & FERTILIZER**	Dark Brown & Thin Black Zone	Black & Degraded Black Zone*
WHEAT, OATS, BARLEY		
On fallow: Use 11-48-0 drilled in	at 40 to 45 lb./Ac.	at 45 to 55 lb./Ac.
On stubble or after cover crop (See special note on page 5, "Fertilizing Stubble Crops")		
(a) Light stubble or trash: 16-20-0 drilled in	at 75 lb./Ac.	at 80 to 90 lb./Ac.
(b) Heavy stubble or trash or following sod-breaking:		
Either 27-14-0 drilled in	at 100 lb./Ac.	at 120 lb./Ac.
or 33.5-0-0 broadcast plus 11-48-0 drilled in	at 100 lb./Ac. at 40 lb./Ac.	at 120 lb./Ac. at 50 lb./Ac.
GRASSES		
(a) Grown for seed:	33.5-0-0 at 100 to 300 lb./Ac. or 21-0-0 at 150 to 450 lb./Ac. or 27-14-0 at 100 to 300 lb./Ac. broadcast as soon as possible after seed harvest.	
(b) Grown for forage:	Same as above in early fall or early spring.	
GRASS-LEGUME HAY MIXTURES		
(a) With less than 25% legume: 27-14-0	at 80 to 160 lb./Ac.	at 100 to 200 lb./Ac.
or 16-20-0	at 100 to 200 lb./Ac.	at 125 to 250 lb./Ac.
(b) With over 25% legume:	broadcast in early fall or early spring	
11-48-0	at 75 to 150 lb./Ac.	at 100 to 175 lb./Ac.
LEGUMES		
For forage or seed production: 11-48-0	at 75 to 150 lb./Ac.	at 100 to 175 lb./Ac.
FLAX, RAPE, MUSTARD, AND RYE		
(Note—Few official tests have been done on these crops. Rates are suggestions.)		
On fallow: Try 11-48-0	at 30 to 40 lb./Ac.	at 35 to 45 lb./Ac.
On stubble or sod-breaking:	Try 33.5-0-0 broadcast at 100 lb./Ac. plus 11-48-0 at 30 to 40 lb./Ac. at time of seeding.	Try 33.5-0-0 broadcast at 120 lb./Ac. plus 11-48-0 at 35 to 45 lb./Ac. at time of seeding.

*Note—For the Degraded Black soils of the Fort Vermilion area see page 5.

**See page 6 for a note on other sources of nitrogen and phosphate.

Grey Wooded Soil Zone

(A) AREA WEST AND NORTH OF MAIN BLACK SOIL ZONE

The key to high yields here is the combined use of proper fertilizers and crop rotations including grass-legume mixtures. (See cover picture.) Most of the soils in this zone are deficient in sulphur as well as nitrogen, phosphorus, and organic matter. In general, therefore 16-20-0 (with 14% sulphur) and 21-0-0 (with 24% sulphur) are likely to give the best responses, especially with legume crops, and are the main fertilizers recommended.

GRAINS

On fallow or light stubble—16-20-0 at 60 to 80 lb./Ac.

On heavy stubble—21-0-0 at 100 to 150 lb./Ac. broadcast
plus 11-48-0 at 40 lb./Ac. drilled in.

FLAX OR FALL RYE

A few tests suggest that 16-20-0 at 40 to 60 lb./Ac. would be worth trying.

GRASSES

(a) Grown for seed—16-20-0 at 150 to 200 lb./Ac.
or 21-0-0 at 150 to 300 lb./Ac.

(b) Grown for forage—16-20-0 or 21-0-0 at 100 to 200 lb./Ac.

GRASS-LEGUME HAY MIXTURES

16-20-0 at 100 to 150 lb./Ac. to supply nitrogen, phosphorus and sulphur or 21-0-0 at 75 to 150 lb./Ac. to supply nitrogen and sulphur or sodium sulphate or calcium sulphate (gypsum) at 75 to 150 lb./Ac. to supply sulphur or pure sulphur at 20 to 50 lb./Ac.

In general, the higher the percentage of legume in the stand, the lower should be the proportion of nitrogen in the fertilizer applied and the higher the proportions of phosphorus and sulphur.

LEGUMES FOR SEED

Use 16-20-0 at 50 to 60 lb./Ac. with nurse crop. On established stands broadcast 16-20-0 at 50 to 60 lb./Ac. in fall or early spring, or else use sodium sulphate or gypsum at 40 to 60 lb./Ac., 21-0-0 at 30 to 50 lb./Ac., or sulphur at 10 lb./Ac.

(B) PEACE RIVER REGION

Very little evidence has been found of sulphur deficiencies in the Grey Wooded soils of this region. Good rotations and proper use of fertilizers are essential however.

WHEAT, OATS, BARLEY, AND FLAX

On fallow—11-48-0 at 30 to 50 lb./Ac. (Use light rate on flax.)

On stubble (See special note on page 5: "Fertilizing Stubble Crops").

(a) Light stubble or trash—16-20-0 at 60 to 120 lb./Ac.

(b) Heavy stubble or trash or following grass-breaking:
Either 27-14-0 at 75 to 100 lb./Ac. drilled in or 33.5-0-0 broadcast at 75 to 100 lb./Ac.
plus 11-48-0 at 25 to 40 lb./Ac. at time of seeding.

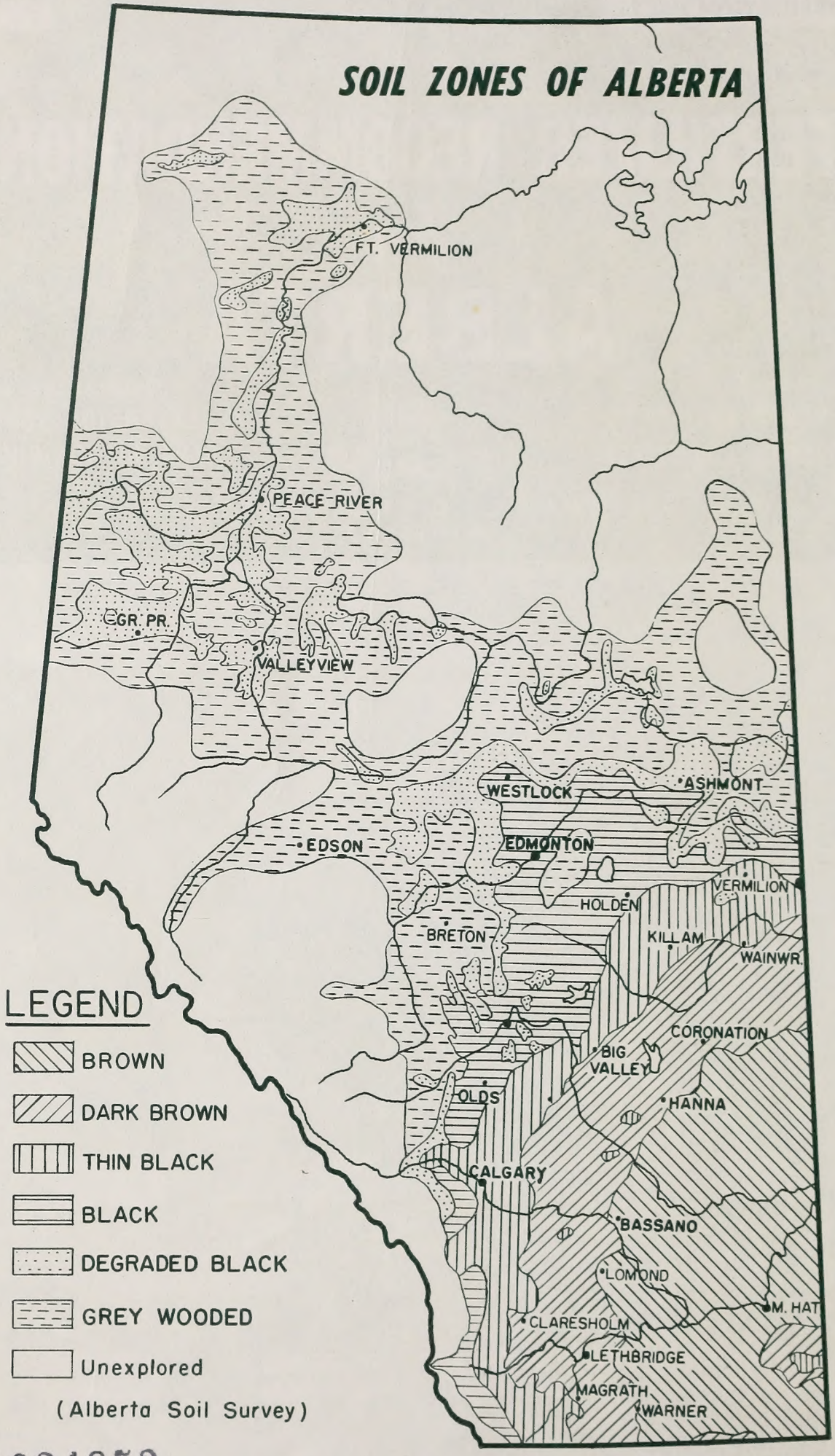
GRASSES FOR SEED OR FORAGE

33.5-0-0 at 75 to 150 lb./Ac. or 27-14-0 at 100 to 200 lb./Ac.

LEGUMES AND GRASS-LEGUME MIXTURES

Follow same recommendations as for Dark Brown and Thin Black Zones, page 3.

SOIL ZONES OF ALBERTA



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SHOULD I USE FERTILIZER? WHAT KIND? HOW MUCH?

The answers to these questions are given briefly in this leaflet. In a well-managed farming program fertilizers can be a profitable investment but care must be taken to use the right kind and amount. The use of fertilizers does not of course guarantee a good crop. A good growing season with proper amounts of rain and sunshine are needed and the soil must be in good tilth. Fertilizer response thus varies from year to year.

Check the map to find the soil zone in which your farm is located, then read the recommendations for use of fertilizers in that zone. If in doubt consult your nearest District Agriculturist, Experimental Farm, or University Department of Soil Science.

FERTILIZER PLACEMENT

The most effective use of a phosphate fertilizer is made when it is drilled in with the seed. Phosphate does not move readily into or through the soil so it must be placed within easy reach of the roots. Thus, when using a discer or one-way for seeding, or when broadcasting fertilizer, extra phosphate is needed to get the same results as when the drilled-in method is used.

Nitrogen on the other hand moves readily into and through the soil. Furthermore, there is a risk of seedling injury if too much is planted with the seed. For the coarse grains 30 pounds of the element per acre is considered the maximum safe application for nitrogen drilled-in at planting time.

ANHYDROUS AMMONIA, 24-20-0, 23-23-0, & 10-30-10

Anhydrous ammonia (82-0-0) is a suitable source of nitrogen but special equipment is required since it is marketed as a liquid stored under pressure in special tanks. The liquid vaporizes on release of pressure and the ammonia gas produced must be placed in the soil by means of a chisel type of applicator. Tests to date in Alberta indicate that pound for pound, the effect of nitrogen is the same whether it be in the form of 82-0-0, 33.5-0-0, or 21-0-0.

24-20-0 and 23-23-0 are suitable sources of nitrogen and phosphate which may be used instead of 11-48-0 or 16-20-0 if a higher proportion of nitrogen is needed or in place of 27-14-0 if a lower proportion of nitrogen is considered necessary.

10-30-10 is a "complete" fertilizer, supplying potash as well as nitrogen and phosphate.

SOIL TESTING SERVICE

A chemical soil test is sometimes helpful in selecting the right fertilizer to use. The Alberta Department of Agriculture in cooperation with the Department of Soil Science, University of Alberta, operates a soil testing laboratory where farmers may have their soils analyzed at a cost of 50 cents per sample. For most meaningful results soil samples have to be collected very carefully and the analyst needs some basic information on the cropping history. At the office of your District Agriculturist you can get detailed instructions on how to take your samples, how and where to mail them, and information that needs to be supplied. Analytical results are mailed out accompanied by a letter containing some practical suggestions from a member of the Fertilizer Committee. During rush seasons several weeks should be allowed for the processing of your soil samples.

Manuring is a good practice.

FARM MANURE

Farm manure is one of the best fertilizers. It supplies not only plant nutrients, but it adds organic matter to the soil. This organic matter improves the physical condition of the land and helps it to hold moisture and resist erosion. Manure is rather low in phosphate, so phosphate fertilizers generally should be used on manured land for best results.

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